

ARMY EXPLOSIVE ORDNANCE DISPOSAL AND ARMY TRANSFORMATION:
IS ARMY EXPLOSIVE ORDNANCE DISPOSAL PREPARED TO SUPPORT
FORCES IN THE EMERGING ENVIRONMENT?

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General Studies

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

ARMY EXPLOSIVE ORDNANCE DISPOSAL AND ARMY TRANSFORMATION: IS ARMY EXPLOSIVE ORDNANCE DISPOSAL PREPARED TO SUPPORT FORCES IN THE EMERGING ENVIRONMENT?

by MAJ Kevin M. DeRemer, 64 pages.

The Army is undergoing transformation to an effects-based force capable of functioning in an emerging operating environment characterized by a thinking, flexible enemy that will use weapons of mass destruction (WMD) as an anti-access capability to slow our response. This represents a paradigm shift from the Cold War Soviet-model aggressor used to train forces for decades. This study used qualitative research methods to determine if Army Explosive Ordnance Disposal (EOD) individual and unit tactical training is sufficient to support forces in the emerging operating environment. To function successfully on the battlefields envisioned in the future, EOD forces must possess the capabilities to arrive at the point of support through multiple means, contribute to the supported organizations conduct of defensive actions, provide limited medical aid until other specialists can arrive, and maintain continuous communications with the chain of command. To prepare for the future, EOD must develop a systemic solution to developing individual and unit tactical skills.

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ACRONYMS

ALSA	Air, Land, Sea Application Center
ARSOF	Army Special Operations Forces
BN	Battalion
CBRN	Chemical, Biological, Radiological, or Nuclear
CONUS	Continental United States
COSCOM	Corps Support Command
CSB	Corps Support Battalion
DCPA	Defense Civilian Preparedness Agency
DIRLAUTH	Direct Liaison Authorized
DOD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
DOS	Department of State
DTLOM-PF	Doctrine, Training, Leader Development, Organization, Materiel, Personnel, and Facilities
EOD	Explosive Ordnance Disposal
EOE	Emerging Operating Environment
EOR	Explosive Ordnance Recognition
FBI	Federal Bureau of Investigation
IED	Improvised Explosive Device
JEODOC	Joint Explosive Ordnance Disposal Operations Center
JEODTF	Joint Explosive Ordnance Disposal Task Force
JFC	Joint Forces Commander

JSOTF	Joint Special Operations Task Force
JTF	Joint Task Force
LIC	Low Intensity Conflict
MACA	Military Assistance to Civil Authorities
MSCA	Military Support to Civil Authorities
MTTP	Multiservice Tactics, Techniques, or Procedures
NBC	Nuclear, Biological, or Chemical
OCONUS	Outside Continental United States
OOTW	Operations Other Than War
OPCON	Operational Control
OSD	Office of the Secretary of State
RTOC	Rear Tactical Operations Center
SASO	Stability And Support Operations
SOF	Special Operations Forces
TACON	Tactical Control
US	United States
USSS	United States Secret Service
UXO	Unexploded Ordnance
VIP	Very Important Person(s)
WMD	Weapon(s) of Mass Destruction

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CHAPTER 1

INTRODUCTION

US [United States] forces can face many types of ordnance on the modern battlefield. These can include NBC [Nuclear, Biological, or Chemical] weapons deployed by US, friendly, or threat forces. Unconventional warfare tactics or terrorist attacks may also include NBC material or the use of IEDs [Improvised Explosive Devices]. These weapons pose a serious threat to all operations. Usually these munitions/devices require immediate response by EOD [Explosive Ordnance Disposal] and other supporting elements.

EOD supports the national security strategy during peacetime, conflicts, operations-in-war, and OOTW [operations other than war]. The EOD mission is to reduce or eliminate the hazards of domestic and foreign conventional, nuclear, chemical, biological and improvised explosive ordnance that threatens personnel, operations, installations, or material. During war, EOD preserves and protects the commander's combat power. During OOTW, EOD supports national security through security, antiterrorism, counter drug, and domestic civil authority operations. (1996, 3-1, 5-1)

Department of the Army, *Explosive Ordnance
Disposal Service and Unit Operations*

Three lessons are evident from the observations made of EOD operations in Afghanistan:

1. A well-trained EOD soldier is more important to success than any EOD equipment.
2. The quality of an EOD soldier is more important than the quantity of EOD soldiers.
3. Competent EOD forces cannot be mass-produced after a crisis occurs. (2002, 26)

“Operation Enduring Freedom: EOD Operations”
by Lieutenant Colonel John Stefanovich. *News
from the Front.*

In 1999 the Chief of Staff of the Army, General Eric Shinseki, issued *The Army Vision* as a framework for the transformation of the Army to the Objective Force (Shinseki 1999). Following closely on *The Army Vision*, doctrine and a campaign plan for transformation were developed as a method of focusing the force on current and future threats as well as required capabilities the Objective Force must achieve to support national policies. The Objective Force is characterized as one that is more responsive, deployable, lethal, versatile, agile, survivable, and sustainable than today's force (Department of the Army 2001a, 33-35). Transformation of the Army, effecting far-reaching changes in organizational design and operational employment while maintaining current-day overmatch capability, is the mission placed before us by the Chief of Staff. Within this context of change, priority has deliberately been given to discovering and implementing those changes in doctrine, training, and leader development over changes in materiel to ensure changes are not incremental or marginal in nature (Shinseki 1999). This study undertakes to determine if Army explosive ordnance disposal (EOD) individual and unit tactical training is sufficient to support forces in the emerging operating environment?

The Army's transformation initiative implies significant changes. Each change to training potentially affects other areas of the force. Combat developers look at impacts within the areas of doctrine, training, leader development, organizations, materiel, personnel, and facilities (DTLOM-PF) when updating force design. By examining each area and the interrelationship of these discrete areas, force developers account for the resource requirements of proposed changes on the total force. This thesis will

acknowledge some of the impacts across DTLOM-PF; however, the project scope is necessarily too narrow to develop each impacted area.

The Army White Paper, *Concepts for the Objective Force*, describes an emerging operating environment characterized by enemies that will use asymmetric means to deny and degrade our armed forces ability to achieve national goals. Enemies will use weapons of mass destruction (WMD) as an anti-access capability to slow the U.S. response. Dispersed small units may employ chemical, biological, radiological, nuclear or sophisticated high explosive (CBRNE) devices against strategically significant symbols, targeting U.S. forces and installations, supporting host-nation populations or infrastructure, or the U.S. homeland. Opposition forces will count on the global media focus on all aspects of military operations and seek to degrade U.S. forces effectiveness by shaping public perceptions (Department of the Army 2002). This operating environment is, to a limited extent, being realized today as the U.S. conducts operations in Afghanistan, prepares for operations in Iraq, wrestles with re-emerging nuclear issues in North Korea, and conducts many other operations in the “Global War on Terror.”

All but the nuclear component of the CBRNE threat has been employed around the globe in just the last decade, and the occurrences are increasing. A quick search of news archives on the Internet reveals a significant number of terrorist bombings carried out around the world. The Monterey Institute of International Studies Center for Nonproliferation Studies (CNS) identifies the incidents of use of CBRN in table 1. (Note: these figures only represent use of chemical, biological, and radiological devices. They do not include “simple” bombings.)

The CNS study also notes a significant rise in casualties from these incidents. The study concludes that there exists a definite trend of increased use of CBRN materials (CNS 2001).

Table 1. Worldwide CBRN Incidents

Year	Total Number of Incidents
1995	60
1996	35
1997	32
1998	153
1999	175
2000	178

Source: Jason Pate, Gary Ackerman, and Kimberly McCloud, “2000 WMD Terrorism Chronology: Incidents Involving Sub-National Actors and Chemical, Biological, Radiological, or Nuclear Materials” (Monterey, CA, 13 August 2001), Center for Nonproliferation Studies (CNS) Web Site; available from cns.miis.edu/pubs/reports/cbrn2k.htm; Internet.

Army EOD is tasked to eliminate or reduce hazards to U.S. and allied forces, installations, infrastructure, and civilians presented by unexploded ordnance, improvised explosive devices (to include CBRNE), and WMDs. Peacetime support missions include supporting the United States Secret Service, Department of State, and Defense Department for very important persons protection; advising and assisting civil authorities

in the remediation of military ordnance that poses a threat to public safety; conducting range clearances by disposing of unexploded ordnance (UXO) on installation training areas; routine destruction of ammunition stocks; responding to requests for emergency support from civil authorities for counterterrorism, UXO, improvised explosive devices (IEDs), and WMDs; and providing training on explosive ordnance recognition. The ongoing global war on terrorism, humanitarian demining operations, peacekeeping operations, domestic preparedness initiatives, force protection operations and the protection of critical assets all help explain the growing focus on planning for Army EOD forces to be an integral part of any operation. The article “Ordnance Corps Vision: America’s Army of the 21st Century” describes future EOD forces as:

A leaner, more capable EOD force . . . modular, enabling it to tailor its response forces to the threat. It will employ parachute qualified and underwater dive qualified personnel worldwide with the capability to respond to any UXO hazard. EOD support will be essential to strategic, operational, and tactical planning. (Ordnance Corps 2002)

Army EOD has undergone a series of evolutionary changes in the last decade. Force structure changed from EOD control teams and detachments to battalions and companies. Significant equipment modernization programs have been undertaken to equip EOD forces with the latest technological tools to address growing CBRNE threats. Two new specialized EOD companies have become operational to specifically address the threat of CBRNE WMDs. Given the emerging threat, ongoing operations around the world, and the Army’s transformation imperatives, is Army EOD individual and unit tactical training sufficient to support forces in the emerging operating environment?

In order to answer the primary question, the following subordinate questions must be answered: What characteristics of the emerging operating environment are relevant to

EOD? What are the requirements (missions) for Army EOD in the emerging operating environment? What individual and unit tactical characteristics or capabilities must the Army EOD force possess to achieve the goals set out by the Chief of Staff with respect to the emerging operating environment? What units now in existence are tasked with missions, having operating requirements, similar to those Army EOD forces will face in supporting the objective force? What individual and unit tactical training is required of these units to maintain operational proficiency? What are the current capabilities and limitations of Army EOD forces individual and unit tactical skills with respect to supporting the objective force in the emerging operating environment? By answering the secondary questions, the primary question can be addressed in a holistic manner. The research is not designed as a readiness or training critique of current Army EOD forces; rather, it is intended as a vehicle to examine the changes, if any, Army EOD must undertake to develop the capabilities required to support the future objective force through a training program addressing individual and unit tactical skills.

Recognition of the challenges inherent in Army transformation, the threats presented in the emerging operating environment, and an understanding of the varied missions of Army EOD across the full spectrum of operations are necessary to identify the capabilities required to support Army forces. This study will review existing Army doctrine, Ordnance Corps documents relative to transformation, existing EOD doctrine, the author's experience as an EOD officer, and interviews with selected EOD and Special Operations Forces (SOF) personnel to propose answers to the research questions.

Due to the length of the paper, the time available to develop the research, and facilities available at the Command and General Staff College, certain limitations on the

topic are required. The research presented will remain in open or unclassified areas. The technical training required to gain and maintain proficiency as an explosive ordnance disposal technician will not be addressed. Although EOD is a field that relies heavily on in-service recruiting, the selection and recruitment of personnel to serve as EOD technicians will also not be addressed here. The individual and unit tactical skills or capabilities addressed are limited to weapons, communications, medical, and mobility skills. While some of these capabilities are applicable to much of what an EOD technician does in peacetime, the primary concern of this paper is to focus on the application or utility of these skills to the future battlefield.

CHAPTER 2

LITERATURE REVIEW

Army Vision

The Army Vision. The documents that provide the vision for Army transformation are a logical starting point to understanding the requirements to support the Objective Force. The Chief of Staff of the Army, General Eric Shinseki, issued *The Army Vision* in October 1999. This brief five-page document underpins the Army transformation process. It describes a spectrum of operations, which drives “a need for land forces in joint, combined, and multinational formations for a variety of missions” (Shinseki 1999). The vision calls for a force that is dominant throughout full-spectrum operations ranging from humanitarian operations through major theater wars. The force described must be lethal. The vision states, “Every element in the warfighting formation will be capable of generating combat power and contributing decisively to the fight” (Shinseki 1999). Addressing sustainability, General Shinseki again states the imperative for Army forces to be dominant across the full spectrum of operations.

Concepts for the Objective Force. The *United States Army White Paper: Concepts for the Objective Force* provides much greater detail on the requirements of the force envisioned, as well as the environment it will contend with. Enemies that will use asymmetric means to deny and degrade our armed forces ability to achieve national goals characterize the emerging operating environment (EOE) described in the White Paper. The notion of the thinking, flexible enemy represents a paradigm shift from the Cold War Soviet-model aggressor used to train forces for decades. Enemies will use weapons of

mass destruction (WMD) as an anti-access capability to slow the U.S. response. This enemy model acknowledges the results of Army war games that demonstrate effective delay of U.S. response greatly contributes to enemy success. The EOE enemy has learned to exploit the openness of U.S. society as a tool of warfare. Dispersed small units may employ chemical, biological, radiological, nuclear or sophisticated high explosive (CBRNE) devices against strategically significant symbols, targeting U.S. forces and installations, supporting host-nation populations or infrastructure, or the U.S. homeland. Opposition forces will count on the global media focus on all aspects of military operations, and seek to degrade U.S. forces effectiveness by shaping public perceptions. “The enemy’s goal will be to fracture U.S. and coalition resolve by . . . exploiting media coverage of . . . strikes at the U.S. homeland” (Department of the Army 2002).

The white paper introduces the notion of the complexity of operations in the emerging operating environment. This complexity goes to both the conduct of war and spectrum of operations. The complexity of the conduct of war has to do with the tendency of new information technology to cause increasing distribution of operations in time, space, and intent while also increasing the number of agencies, allies and coalitions involved. The complexity of operations addresses the “full spectrum operations” alluded to in *The Army Vision*. The white paper acknowledges the historical fact that the Army is involved in far more stability and support operations, aimed at shaping the environment, than offensive or defensive combat operations. What is new is the focus on the need for the force to be expert at transitioning between these various types of operations multiple times within short periods of time. The sum total of this complexity is a compression of the strategic, operational, and tactical levels of war.

Broad discussion of the enabling technology for several of the Objective Force characteristics is addressed in the White Paper; however, it ties the success of the enabling technology to trained and ready soldiers. One key area addressed as a technological enabler is space-based communications, which "...provide the capability for a smaller deployed footprint with "reach back" and "push forward" tailored communications" (Department of the Army, *United States Army White Paper: Concepts for the Objective Force*, 2002). In discussing training forces to operate in the EOE, the White Paper states, "Training units for this capability requires more training resources and time". The paper also acknowledges the linkage between doctrine, training, leader development, organizational design, material and soldiers (DTLOMS). In short, the White Paper describes a smaller, highly trained force operating in an austere support environment affecting strategic national goals.

"Ordnance Corps Vision: America's Army of the 21st Century." The Ordnance Corps plays a key role in providing support to the Legacy Force, and will continue in that role for the Objective Force. The key question this document attempts to answer is how the Ordnance Corps must transform to support the Objective Force in the key logistical functions of arm, fix and conduct Explosive Ordnance Disposal (EOD) operations. Key components of the threat described in Chapter Two are that stability and support operations (SASO) are likely to remain a large and increasing component of Army operations, and that the Army will be called upon to function in operations not directly tied to strategic power projection. It also points to the challenges posed by the global proliferation of CBRN technology and the increasing hazards of unexploded ordnance (UXO) around the world. The Ordnance Corps vision article references "an overarching

force sustainment command responsible for all elements of logistical and EOD support to the nation's military and civil agencies" (U.S. Army Ordnance Corps, 2002). However, it acknowledges that this new entity may be composed of several legacy elements rather than a new consolidated activity.

Specific to the EOD function, the article predicts a joint service EOD force that is modular and tailorable to the threat. This force "will employ parachute qualified and underwater dive qualified personnel worldwide with the capability to respond to any UXO hazard" (U.S. Army Ordnance Corps, 2002). The force sustainment network mentioned above will manage this force. A discussion of the necessity for early integration of EOD support at all three levels of planning (tactical, operational, and strategic) to ensure battlefield success across the full spectrum of conflict points to several missions for future EOD support. Many future missions are here today, such as: providing EOD support to the Secret Service, State Department and Defense Department for very important persons protection (VIP); and advising and assisting civil authorities in the remediation of military ordnance; and responding to counter terrorism and WMD incidents. Rather than develop new mission sets for EOD, the Ordnance Corps Vision highlights the renewed attention many traditional EOD missions have gained post-September 11. The paper also points to a difficulty seemingly overlooked in force development; that is that peacetime EOD operations continue as wartime requirements increase.

Implications addressed by the Ordnance Corps vision article focus heavily on joint and combined interoperability and stress the need for ordnance units to "continually train to operate in coordination with elements of other services, agencies, and nations"

(U.S. Army Ordnance Corps, 2002). In line with *The Army Vision* and concepts from the Army White Paper addressed earlier, The Ordnance Corps vision calls for small, highly trained modular units operating in a dispersed battle space.

Commonalities

As one would expect, several common threads flow through the three vision documents reviewed. Each document points to the need for highly trained soldiers for success in any Army operation. Small units operating in a dispersed manner throughout a rapidly transitioning area of operations (which will include key nodes in continental United States (CONUS)) characterize the emerging environment. These units must be capable of operating semi-autonomously; with reach back communications, to achieve intent-based strategic aims. The soldiers that make up this force require a broad range of individual and collective deployment skills, and must be trained in a joint and combined environment to master the collective interoperability and transition skills necessary for success. The documents also acknowledge that specific doctrine is still being developed, and will necessarily follow the transformation to the Objective Force.

EOD Doctrine

Department of Defense Directives

Department of Defense (DOD) Directive 3025.1, *Military Support to Civil*

Authorities (MSCA). This Directive governs the MSCA activities of all DOD components within CONUS and U.S. possessions and territories. The Secretary of the Army is designated the executive agent for the DOD, and carries out his responsibilities through the Directorate of Military Support. In this role, the Secretary of the Army is authorized

to task DOD components to respond to requests for assistance, but must coordinate with the Chairman of the Joint Chiefs of Staff to commit military forces assigned to Unified or Specified Commands. Key to this Directive, from an EOD perspective, is the statement of policy that *MSCA* includes immediate response activities during peacetime, war or transition to war for civil emergencies or attacks. Immediate response activities are those emergency actions taken by military commanders to save lives, prevent human suffering, or mitigate great property damage even when prior approval from higher headquarters has not been obtained due to time constraints. Clearance of explosive ordnance from the public domain for rescue, evacuation, or restoration of essential services is specifically mentioned. The Directive delineates responsibilities, policy, staffing and coordination and training requirements, required notifications, and command and control issues up through the Secretary of Defense.

DOD Directive 3025.15, *Military Assistance to Civil Authorities (MACA)*. This Directive applies to all DOD components similarly to the *MSCA* Directive discussed above, but includes sensitive requests for support such as actions taken to assist law enforcement or responses to acts of terrorism. Requests for assistance are still managed through Directorate of Military Support; however, the Secretary of Defense retains approval authority for support that involves use of military assets assigned to a Combatant Commander, support to civil disturbances, DOD response to acts of terrorism, and any support that may lead to a confrontation resulting in the use of lethal force. The Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (SO/LIC) coordinates all counterterrorism crisis management actions, while consequence management support is coordinated by Directorate of Military Support. Assistant

Secretary of Defense (SO/LIC) is also responsible for coordination and policy review of DOD responses to WMD. While this seems clear-cut, the Directive designates the Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs as the technological advisor for radiological accidents and WMD incidents as well as terrorist incidents involving chemical and biological agents. In addition, the Assistant Secretary also advises on interdepartmental technical capabilities and responsibilities.

DOD Directive 3025.13, *Employment of DOD Resources in Support of the USSS*.

This Directive governs EOD activities in support of the USSS protective responsibilities, as well as other military logistical support provided to the USSS. Specific issues addressed are reimbursable costs and procedures, and the issue and control of USSS EOD credentials.

Service Regulations

Joint Army Regulation 75-14, *Interservice Responsibilities for Explosive*

Ordnance Disposal. Updated in 1992, this joint regulation delineates the EOD responsibilities of the four services. The Army is responsible for providing EOD services on all land mass areas not specifically assigned to another service. Land mass areas assigned to other services consist of assigned operational areas or service installations. The Army is also designated to provide an Explosive Ordnance Recognition (EOR) program; serve as the DOD Executive Agent for coordination and tasking of all OSD, USSS, or DOS EOD support requests; and serve as the primary DOD contact to the FBI and Department of Energy in operations involving improvised nuclear devices or high

technology improvised explosive devices. The Navy is tasked to provide EOD services within oceans and contiguous waters, rivers, canals, and enclosed bodies of water. Additional Navy responsibilities specific to EOD training and technology stemming from DOD Directive 5160.62, which assigned the Navy as the single manager for EOD Training and Technology, are reiterated as well. The Air Force and Marine Corps are tasked to provide EOD support to their service installations. Service funding, operational coordination, and assistance is also directed.

Army Regulation 75-15, Responsibilities and Procedures for EOD. This regulation is the primary source governing all EOD operations for the active Army; however, this publication does not apply to the reserve components. This regulation describes the EOD mission within the Army, which is to:

- a.* Provide the capability to neutralize hazards resulting from domestic or foreign, conventional, nuclear, chemical, biological and improvised explosive nuclear and non-nuclear devices, which, because of unusual circumstances, present a threat to military operations, installations, personnel or materiel.
- b.* Provide explosive ordnance disposal support to the United States Secret Service for protection of the President of the United States and other designated VIP's.
- c.* Provide explosive ordnance disposal service support in the theater of operations and CONUS.
- d.* Train military personnel, Defense Civil Preparedness Agency (DCPA) personnel and civil authorities, as explosive ordnance reconnaissance agents (EORA).
- e.* Provide assistance to public safety and law enforcement agencies (civil authorities) in developing a capability to deal with the IED threat and, when necessary, to provide EOD service in the interest of public safety.
- f.* Conduct explosive ordnance disposal "bomb and sabotage" training for civil preparedness, law enforcement, fire protection and other public officials.
- g.* Examine, identify, and report new and unusual items of explosive ordnance for technical intelligence purposes.

- h. Assist and/or supervise the routine destruction of unserviceable ammunition at CONUS and OCONUS installations (excluding DARCOM installations) upon receipt of a request from an accountable agency. Transportation and labor will be provided by the requesting, accountable agency.
- i. Dispose of explosive ordnance collected during war-souvenir collection campaigns.
- j. Provide explosive ordnance disposal support to Departments of Energy and Justice in the neutralization of improvised nuclear devices in accordance with current agreements and directives. (DA 1978)

This regulation details requirements for EOD training and qualification, classification of EOD tools and procedures, and gives general guidance for the conduct of EOD operations according to the missions listed above.

Army Field Manual 9-15, *Explosive Ordnance Disposal Service and Unit*

Operations. This field manual serves as the primary reference for EOD personnel and describes doctrine for planning and conducting EOD operations. Chapter One includes a useful description of EOD functions and related battlefield tasks (see table 2, below).

Table 2. EOD Battlefield Tasks by Combat Function

<u>MOBILITY</u>	<u>SECURITY</u>	<u>SURVIVABILITY</u>	<u>LOGISTICS</u>	<u>INTELLIGENCE</u>
UXO/IED Elimination	VIP Protection	UXO/IED Elimination Range Clearance	Routine/Emergency Ordnance Destruction Civil Authority Cooperation Nuclear, Chemical, or Biological Shipments	Technical Intelligence or New or Unusual Ordnance

Source: Department of the Army. FM 9-15, *Explosive Ordnance Disposal Service and Unit Operations* (Washington, DC. 8 May 1996), 1-5.

The EOD functions are drawn from Army doctrine, and are mobility, survivability, logistics, security, and intelligence. These EOD functions are focused on protecting the commander's combat power on a battlefield growing more lethal as technological advances and falling prices make improved conventional munitions and scatterable mines more prevalent. An additional focus of the first chapter is a description of EOD organizations, roles, structures, and principles of operation. This manual is intended to provide relevant employment characteristics for consideration by planners, however, an EOD planner should be brought into the process as early as possible to ensure required EOD support available for a given operation.

The EOD group provides staff planning for operations throughout a theater area of operations, as well as command and control of two to six EOD battalions (see figure 1). The EOD battalion provides command and control for three to ten EOD companies, staff planning for EOD operations, and coordination for prioritization and categorization of unexploded ordnance incident reports. Each corps and Theater Army Area Command is allocated one battalion. In each of these structures, the EOD group and battalion, the commander serves as the special EOD staff officer to the supported echelon, advising the commander, monitoring EOD operations, and developing plans to provide necessary EOD support. The EOD company is the operational component of the EOD structure and is assigned to support corps and theater Army area command units.

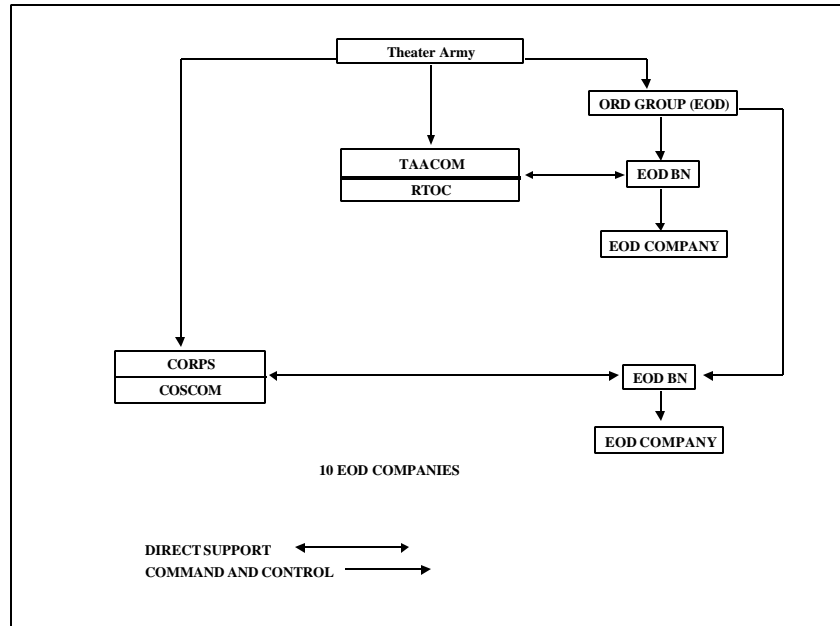


Figure 1. EOD Companies in a Theater. *Source:* Department of the Army. FM 9-15, *Explosive Ordnance Disposal Service and Unit Operations* (Washington, DC, 8 May 1996), 1-9.

Each EOD company is composed of five light and two heavy teams. The light team consists of a team leader (staff sergeant) and a team member (typically a specialist). Doctrinally, this team can operate independently of the company for up to 72 hours. The heavy team consists of three EOD personnel, led by a sergeant first class or senior staff sergeant. At full strength, an EOD company consists of just 22 personnel, of which only 19 are EOD qualified. An EOD company is assigned to support the Corps Support Battalion (CSB). The company assigned to support a CSB (Forward) is the unit that will be called upon to provide support throughout a division area. This may help place the following in context:

EOD units are small and have limited assets (weapons, vehicles, and personnel). This makes them highly mobile but restricts their capability for sustained

operations without support. When deployed they will require support above the operator level in maintenance and in all classes of supply. This support must be provided by the units that are designated to support EOD. The only support that will come through EOD channels will be for EOD-specific tools and equipment and for replacement personnel. (Department of the Army. *Explosive Ordnance Disposal Service and Unit Operations*. 8 May 1996.)

Army Field Manual 21-16, *Unexploded Ordnance Procedures*. This field manual and or fleet marine force manual, issued in 1994, is provided for units to conduct training necessary for dealing with unexploded ordnance (UXO) hazards. It provides threat information, recognition, immediate action steps, self-extraction procedures, and UXO reporting procedures. On the importance of UXO reporting procedures, the manual states:

UXO hazards on the battlefield have an enormous affect on command and control decisions for battle planning. The location of these hazards is vital to the command and control elements when projecting movement and support of combat units. UXO hazards also have a direct impact on the combat capabilities of any element that encounters them. To assist commanders, an effective UXO reporting system must be in place and maintained to allow commanders to concentrate EOD and engineer assets according to priorities and battle plans. (DA 1994, 4-1)

The manual also contains several appendices useful for identification of UXO, as well as tools to estimate the explosive hazard and evacuation distances.

Army Field Manual 3-100.38, *Multiservice Procedures for Unexploded Ordnance Operations*. Published in 2001, this manual was developed at the Air Land Sea Application Center (ALSA) as an unclassified multiservice tactics, techniques, and procedures (MTTP) publication. All services are responsible for incorporating the tactics, techniques, and procedures promulgated in this publication into service and command manuals, training curricula, and regulations, as appropriate. This manual provides more in-depth information useful for unit trainers in preparing units to deal with UXO hazards than FM 21-16. Perhaps due to the joint nature of the preparation of the manual, it provides a higher level of fidelity in the guidelines presented for planning, reporting,

tracking, and force protection measures for UXO. It goes beyond the manual reviewed above in delineating roles of EOD and engineer personnel, as well as service specific missions and capabilities. In describing the UXO threat, this publication provides information on dud-produced UXO, hazards to different types of forces, including civilians and infrastructure, and impacts on operations. Chapter two focuses on UXO and joint operations. Several operational considerations are listed, and staff responsibilities are discussed in detail. Chapter three provides an overview of service component EOD and engineer capabilities, and the appendices provide a wealth of information on UXO operations and training.

Army Field Manual 4-30.16, *Multiservice Procedures for Explosive Ordnance Disposal in a Joint Environment*. Like FM 3-100.38, this publication is promulgated by ALSA. It provides joint EOD command and control considerations, and provides guidance for planning and conducting EOD operations in a joint environment. The first chapter details the mission of EOD within the Department of Defense, discusses EOD threats, and provides a list of common EOD characteristics and some of the history of EOD. In discussing interoperability of the service EOD forces, chapter one states:

The existing multiservice training and technical manuals, common equipment, and jointly supported research and development program make EOD one of the most interoperable specialties in the US military. Multiservice EOD forces have worked side by side in numerous operations during recent contingencies and conflicts. These joint EOD operations demonstrate the potential for greater planning and operational efficiency in the future. (Air Land Sea Application Center 2001, I-3)

The second chapter discusses EOD operations in a joint environment. Formation and structure of a joint EOD operations center (JEODOC) is discussed. The JEODOC is a multifunctional operational center whose primary purpose is to manage theater-level

UXO hazard-reduction operations and EOD planning, integrating, coordinating, and tasking functions (see figure 2). In addition, three EOD employment options are detailed for use by the joint forces commander. The first is the service-component responsibility, used when each service component controls its own EOD forces and provides EOD forces for its requirements. The point is well made that while this is most often the model chosen, in execution, EOD forces should be provided direct liaison authorization (DIRLAUTH) explicitly.

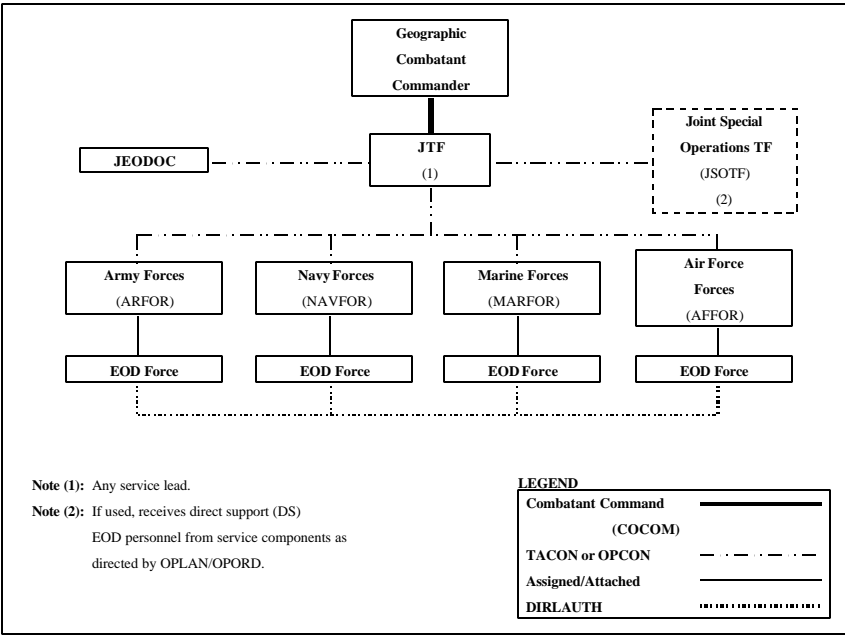


Figure 2. Service-Component Responsibility (with DIRLAUTH) Organization.
 Source: Air Land Sea Application Center, *Multiservice Procedures for Explosive Ordnance Disposal in a Joint Environment*, 2001, II-3.

This option works best when the joint force commander does not require direct control of EOD missions, the service component geographic areas of responsibility are

clear, and the situation allows deployment of adequate numbers of each of the service component's EOD forces. Some employment considerations of this command and control arrangement are that it may increase response time to a major accident or incident, it increases the difficulty of intelligence and operational information sharing between service component EOD forces, but it allows each service to retain control of its EOD assets. Clear expression of DIRLAUTH within the operation plan or order allows EOD forces to better share information and react to major accidents that may exceed the capabilities of a single service component EOD forces in theater.

The second method of employment discussed is the lead-service component option (see figure 3). Established by the combatant commander in consultation with subordinate JFC and service-component commanders, the lead-service component will normally be the service with the most EOD requirements in theater. This method of employment is best suited to support a limited duration mission or to provide more efficient EOD support in a short-notice, austere environment such as the initial Bosnia and Kosovo rotations. This option allows more efficient use of EOD assets for JTF-specific missions by centralizing all routine EOD operational taskings and data tracking, while allowing service-components to retain EOD forces necessary to support service-specific missions. This option also provides a mechanism for service components to plan for fluctuations of EOD force responsibilities as the operation proceeds through different phases and transitions. Technical intelligence acquisition and dissemination, as well as operational information sharing is greatly increased.

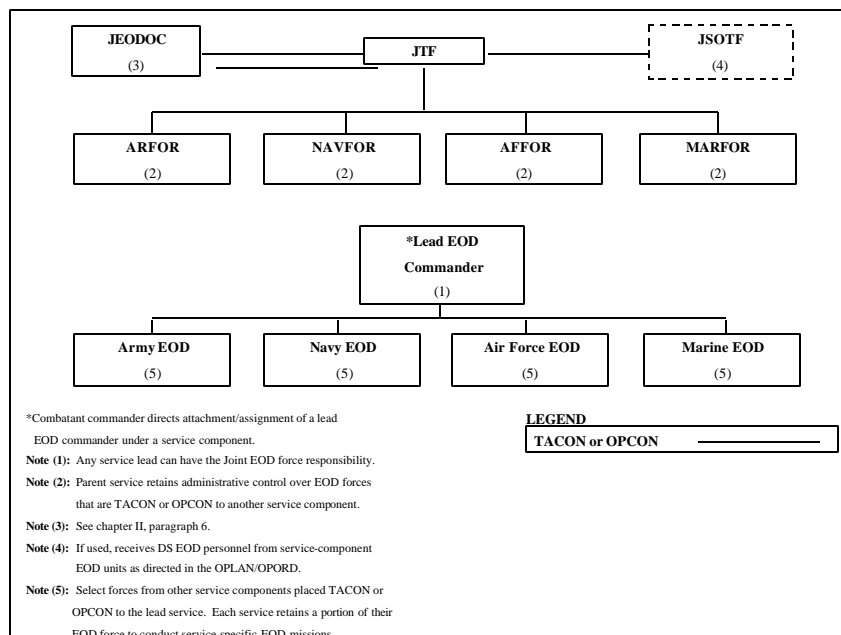


Figure 3. Lead-Service (with or without TACON/OPCON) Organization. *Source: Air Land Sea Application Center, Multiservice Procedures for Explosive Ordnance Disposal in a Joint Environment, 2001, II-5.*

The final method of employment discussed in this publication is the formation of a subordinate joint EOD task force (JEODTF) (see figure 4). A JEODTF is a subordinate joint task force that controls two or more service-component EOD organizations and is jointly staffed. Establishment of a JEODTF allows the joint task force commander to focus limited EOD assets and to optimize EOD mission capability, and is usually employed for a limited time to clear hazards that threaten theater-wide operations. The JEODTF provides similar functions as the JEODOC, but includes command authority. Service-unique EOD requirements remain the responsibility of individual service components, and should be considered when establishing a JEODTF. This option provides the EOD forces with unity of effort, centralized planning, unity of command,

and facilitates the combatant commander's command and control over EOD forces and missions. Due to the structure of the JEODTF, there is no need to establish the JEODOC.

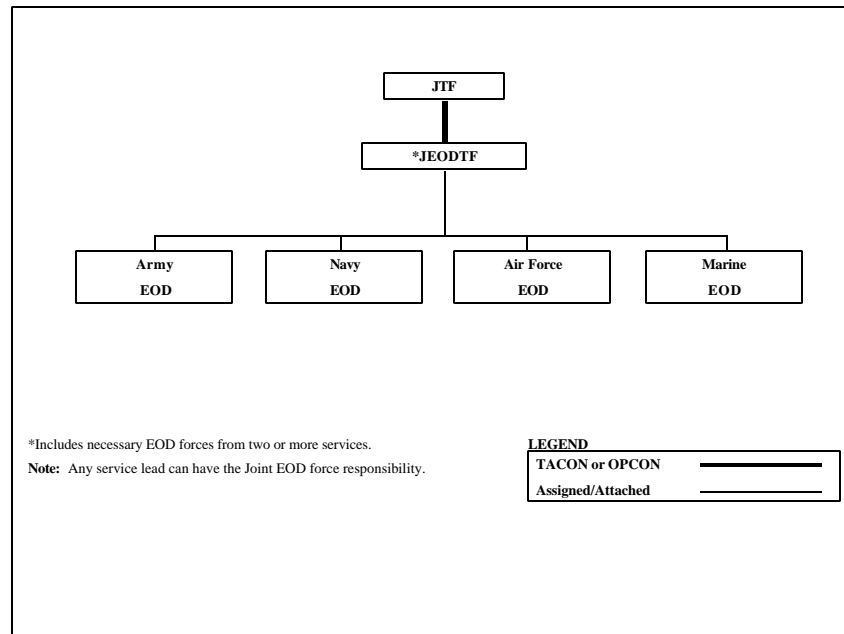


Figure 4. JEODTF Organization. *Source:* Air Land Sea Application Center, *Multiservice Procedures for Explosive Ordnance Disposal in a Joint Environment*, 2001, II-6.

Chapter 2 includes a detailed discussion of the establishment of the joint EOD operations center (JEODOC). The JEODOC is a multifunctional operations center whose primary purpose is to manage theater-level UXO hazard-reduction operations and EOD planning, integrating, coordinating, and tasking functions. Major functions that should be included in the JEODOC are the operations and intelligence section, the administrative and logistics section, and the communications and electronics section.

The remaining chapters include a detailed discussion of EOD forces characteristics and capabilities by service-component. The appendices include a

multiservice EOD capabilities matrix, an EOD planning checklist for joint operations, a detailed treatise on authorities, staff structure, and functions and responsibilities of a JEODTF, examples of standardized EOD reports, and a listing of recurring EOD support operations.

EOD Studies

Joint Explosive Ordnance Disposal (EOD) Command: The Key to Effective and Efficient Use of EOD Forces. This 2001 report by LCDR Dale Fleck proposes to organize all Department of Defense EOD services under a joint EOD command. The author makes persuasive arguments that the commonality of equipment, tactics, techniques and procedures, basic EOD training, and the historical operational employment of EOD points to a need to organize EOD under a joint command. Acknowledging the disadvantage of the additional funding and manpower requirements such a command would generate, the author nevertheless argues that the inherent advantages of increased EOD force employment visibility, training and employment synchronization, staff planning support, and common command, control, communications, computer and intelligence (C4I) architecture would generate an EOD force capable of efficiently supporting both service-component EOD requirements, and those unforeseen requirements for all future contingencies.

Joint Service Explosive Ordnance Disposal-The Readiness of Joint Service EOD to Counter Twenty-First Century Threats The Institute for Defense Analysis prepared this 1999 report for the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict. The authors interviewed most of the key

members of the EOD community to determine their views on the strengths and weaknesses of the EOD program. Among the recommendations of the study is the establishment of a single EOD point of contact for operational matters within one of the J-Directorates of the Joint Staff, as well as single EOD action officer positions on each combatant commander's staff. The report stops short of recommending creation of a joint EOD command due to difficulties in properly determining where such a command would fit (under which combatant command).

Special Operations Forces Doctrine

Army Field Manual 100-25, Doctrine for Army Special Operations Forces. This 1999 manual is the integrating manual for U.S. Army Special Operations Forces (ARSOF). ARSOF includes Special Forces (SF), Ranger (RGR), Special Operations Support Command (SOSCOM), Army Special Operations Aviation (ARSOA), Psychological Operations (PSYOP), and Civil Affairs (CA) personnel and organizations. This manual serves as ARSOF's doctrinal foundation, providing authoritative guidance for the employment of all ARSOF, and is the root for all current and proposed ARSOF manuals. ARSOF conducts operations throughout the full range of military operations. ARSOF is primarily land oriented, and their operations include offense, defense, stability, and support functions. Conventional service-component forces often support ARSOF missions. ARSOF tactical actions that often require support of service-component forces include foreign internal defense, countermining activities, civil support, nation assistance, humanitarian assistance, antiterrorism, combating terrorism, and noncombatant evacuation operations. In addition to an in-depth description of ARSOF characteristics, capabilities, limitations, and employment considerations, this manual contains a list of the

ARSOF Truths (see figure 5). These truths constitute a core belief of the ARSOF community, but many apply to other forces as well. In addition, ARSOF personnel undergo careful selections processes and receive mission-specific training beyond basic military skills to achieve entry-level skills, making timely replacements or creation of personnel and capabilities very unlikely. The typical ARSOF soldier is more mature and experienced than his service-component equivalent, partially due to the selection and training. ARSOF is employed in small units, often at great distances from operational bases, and utilize sophisticated means of insertion. Units can be task-organized quickly and rapidly deployed to provide situationally tailored responses. And finally, special operations tend to be high-risk operations that present limited windows for effective intervention and often require first-time success.

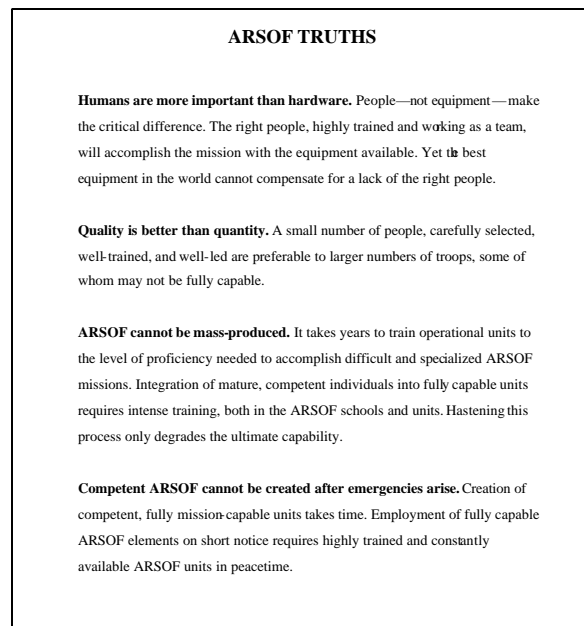


Figure 5. ARSOF Truths. *Source:* Army Field Manual 100-25, *Doctrine for Army Special Operations Forces*, 1999, 1-12.

CHAPTER 3

RESEARCH METHODOLOGY

This project uses qualitative research methods to answer the primary research question: Is Army Explosive Ordnance Disposal (EOD) individual and unit tactical training sufficient to support forces in the emerging operating environment? As evidenced by the literature review, this research question touches upon a number of complex systems and does not lend itself well to quantitative methods. As noted in chapter one, each change to training potentially affects other areas of the force. Within the Army Training and Doctrine Command (TRADOC), the areas of doctrine, training, leader development, organizations, materiel, personnel, and facilities (DTLom-PF) are considered when updating force design. Each component of DTLom-PF presents a complex interaction of systems designed to bring about the forces the Army requires to accomplish assigned missions. Answers to the research question will not be expressed in definitive terms linked to specific data; rather, valid results may be obtained through developing a greater understanding of the issues involved. This chapter explains the research design and describes the methodology used to answer the primary research question.

Qualitative research methods are appropriate for this topic because the central issue is human perception. This type of research refers to methods and techniques of observing, documenting, and analyzing patterns or characteristics of the subject of the study. Qualitative research “attempts to understand and make sense of phenomena from the participant’s perspective”, and “is characterized by the search for meaning and

understanding”, and “an inductive investigative strategy” (Merriam, 2002). The techniques used to conduct research for this study are document analysis, interviews, and observation.

Qualitative Techniques

The document analysis consisted of reviewing existing publications to establish a context for the research. With the assistance of the staff of the Combined Arms Research Library, military and Internet databases were queried using the keywords explosive ordnance disposal to determine if previous research existed relative to the topic. The majority of articles and studies returned were not used after determining from the abstract or introduction that they dealt primarily with tools or technical solutions to specific ordnance neutralization issues, and were therefore outside the scope of the research. Documents used for this study include Army doctrine, Army and Ordnance Corps documents relative to transformation, existing EOD and Special Operations Forces (SOF) doctrine, and relevant notes and after action reviews of soldiers deployed to Operation Enduring Freedom in Afghanistan (only unclassified documents were included in this study).

The interview process consisted of selecting both EOD and SOF personnel with experience relative to the study. No attempt was made to select a representative sample of the population; rather, personnel were selected to “allow the widest possibility for readers of the study to connect to what they are reading” (Seidman, 1998). This purposeful sampling was conducted to “understand the experience of other people and the meaning they make of that experience” (Seidman, 1998) relative to the research question. The

primary criteria used to determine the number of personnel interviewed were sufficiency and saturation of information. For this project, sufficiency is defined as using adequate numbers to reflect the range of participants that make up the population (Seidman, 1998). Saturation of information refers to the point at which the interviewer begins to hear the same information repeated and is not hearing anything new (Seidman, 1998). Participants were informed of the nature of the research (classification level, topic, program, author, and thesis), their right to withdraw their participation at any point, their right to review any material used from their interview, the form the results of the interview would take, and that their identities would be guarded to the greatest extent possible. All interviews took a semi-structured form. Some specific information was elicited from all participants, and a list of questions was used to ensure the information was gathered. The balance of the interviews was conducted in an unstructured format, where remaining topic areas were explored without specific questions or a predetermined order (Merriam, 2002). All interview notes were either read back to the participant, or sent by electronic mail for confirmation of the accuracy of the data collected and final consent to the use of the data.

Observations consist of the author's experiences as an EOD officer and interaction with the participants during the interview process. A "characteristic of... qualitative research is that the researcher is the primary instrument for data collection and data analysis" (Merriam, 2002). Acknowledging that biases exist in the researcher that may have an impact on the findings, Merriam points out that it is important to identify and monitor them throughout the research process. Finally, Creswell points out that selecting qualitative methods is important "to emphasize the researcher's role as an active

learner who can tell the story from the participant's view rather than as an "expert" who passes judgment on participants" (Creswell, 1998).

CHAPTER 4

ANALYSIS

Operating Environment

Characteristics of the Emerging Operating Environment

As discussed in earlier chapters, The Army White Paper, *Concepts for the Objective Force*, describes an emerging operating environment populated with enemies that will use asymmetric means to deny and degrade our armed forces' ability to achieve national goals. Enemy forces may use weapons of mass destruction (WMD) as an anti-access capability to slow the U.S. response. Widely dispersed small units may employ chemical, biological, radiological, nuclear or sophisticated high-explosive (CBRNE) devices against strategically significant symbols, targeting U.S. forces and installations, supporting host-nation populations or infrastructure or even the U.S. homeland. The notion of the thinking, flexible enemy who uses asymmetric means of attack, such as WMDs used to deny access, represents a paradigm shift from the Cold War, Soviet-model aggressor used to train forces for decades. This new enemy model acknowledges results of Army war games that demonstrate that the effective delay of U.S. forces greatly contributes to enemy success. Opposition forces will seek to degrade the effectiveness of U.S. forces by shaping global public perceptions by exploiting the media focus on all aspects of military operations. "The enemy's goal will be to fracture U.S. and coalition resolve by . . . exploiting media coverage" (Department of the Army 2002).

The White Paper also emphasizes the complexity of operations in the Emerging Operating Environment. This complexity goes to both the conduct of war and the

spectrum of operations. The complexity of the conduct of war has to do with the tendency of new information technology to cause increasing distribution of operations in time, space, and intent while also increasing the number of agencies, allies, and coalitions involved. The noncontiguous, nonlinear battlefield is a result of this distribution of operations in space, and the recognition that the U.S. Army, although a large organization by the standards of measurement applied to civilian businesses, is necessarily unable to field a force large enough to directly occupy the vast amounts of territory that make up an aggressor state. By occupying key locations, however, the U.S. Army can exert influence throughout the territory of a state to achieve national or strategic goals. The complexity of operations addresses the “full-spectrum operations” alluded to in *The Army Vision*. The White Paper acknowledges the historical fact that the Army is involved in far more stability and support operations, aimed at shaping the environment, than offensive or defensive combat operations. What is new is the focus on the need for the force to be expert at transitioning between these various types of operations multiple times within short periods of time in a single theater. The sum total of this complexity of operations is a compression of the strategic, operational, and tactical levels of war. While it has long been understood that strategic decisions have a direct impact at the tactical level, it is now recognized that the actions of a unit, or even an individual, at the tactical level of war may have significant consequences on the strategic level.

Characteristics of the Afghan Theater of Operations

In October 2001, a U.S. led coalition began operations to rid Afghanistan of Taliban control and to kill or capture the Al-Qaida terrorists responsible for the horrific

attacks against the U.S. on 11 September 2001. Afghanistan is a landlocked country of approximately 647,500 square kilometers, slightly smaller than the state of Texas. It is bordered by six nations, including Pakistan and China, and the terrain is characterized by steep changes in elevation and rugged, mountainous regions. The Taliban was a fundamentalist Islamic regime that ruled the nation after defeating the Soviet's attempts at occupation over a ten-year period ending in 1989. Widespread poverty increased under the rule of the Taliban regime, with the nation being known for its production of opium, ethnic clashes, and the hospitality afforded to terrorists.

On 7 October, the Taliban controlled more than 80% of Afghanistan, and Anti-Taliban forces were on the defensive. Al Qaida was entrenched in camps and safe houses throughout the country. Afghanistan was, in fact, a terrorist sponsored state. . . . Within weeks the Taliban and Al Qaida were reduced to isolated pockets of fighters. (*Operation Enduring Freedom* available from <http://www.globalsecurity.org/military/ops/enduring-freedom.htm>; Internet; accessed on 30 October 2002)

The U.S.-led coalition was composed of forces from over twenty nations, numerous international organizations, and ethnic Afghan forces from several clans. Operations were conducted simultaneously on numerous fronts and included direct action missions to kill or capture Taliban leadership figures, the provision of humanitarian aid to Afghan civilians, and the destruction of the Taliban military. Forces employed varied from small Special Operations Forces (SOF) elements traveling on horseback with Afghan fighters to the first use of armed, unmanned Predator drones firing on escaping enemy convoys. Operational fires, air-delivered munitions, were a hallmark of the operation, with over 70 percent of the attacks carried out using precision-guided munitions. Coalition radio broadcasts and leaflet drops were also used extensively to

encourage Taliban forces to surrender and to ensure Afghan civilian support of coalition forces.

Central Command (CENTCOM), exercising command and control of the operation from their Tampa headquarters, noted that the coordinated efforts of several U.S. agencies and departments alongside the Department of Defense produced synergistic effects that would have otherwise not been achieved, particularly in the realm of intelligence. That CENTCOM was comfortable directing military operations over 7,000 miles away speaks favorably of the situational awareness provided by systems developed over the last decade. The initial reliance on aerial logistics support, though problematic due to the theater requirements versus national capabilities, was also a success of the initial operation.

As the terrorist regime was defeated, Taliban military forces and Al-Qaida fighters sought refuge in the many caves and the sparsely populated region along the Pakistani border. U.S. and coalition forces continue to locate and destroy isolated groups of fighters throughout these areas. Unable to assemble into significant formations, small units and sometimes individuals continued to carry out guerrilla-type attacks aimed at U.S., coalition, and Afghan forces and the facilities of the new interim Afghan government. The attacks include sniping, mortar or rocket fire, bombings, and the use of vehicle-borne improvised explosive devices (IEDs).

Similarities and Relevance to Army Explosive Ordnance Disposal

The Taliban regime and the Al-Qaida organization presented enemies that attempted to degrade U.S. armed forces ability to achieve national goals through the use

of asymmetric means. The employment of dispersed, small units attacking U.S., coalition, and Afghan forces and installations and the interim Afghan government infrastructure through bombings, vehicle-borne IEDs, and other terror-tactics mirrors the emerging environment discussed in The Army White Paper *Concepts for the Objective Force*. Taliban and Al-Qaida forces attempted to exploit media coverage of the operation in Afghanistan to rally support, primarily by unsuccessfully portraying U.S.-led actions as an attack on Islam. Operations in Afghanistan were most certainly complex. CENTCOM's exercise of command and control from the U.S., the use of SOF to lash together an alliance of ethnic Afghan factions across the country, the use of operational fires targeting specific Taliban and Al-Qaida strongholds, and the concurrent humanitarian relief operations is a clear demonstration of the distribution of operations in time and space on a noncontiguous, nonlinear battlefield.

Afghanistan is one of the most heavily mined areas of the world, with some organizations estimating up to 1,000,000 mines present. The unexploded ordnance left by years of warfare is also a concern to ongoing operations in Afghanistan. Significant EOD forces were deployed early in Afghanistan to provide force protection by identifying mined areas for remediation by engineers and to deal with the large amounts of munitions haphazardly stored throughout the country. Traditionally, the majority of EOD operations take place upon conclusion of offensive operations, during the rebuilding phase. Due to the hazards present in Afghanistan, EOD forces were in high demand throughout all phases and types of operations. The growing realization of the hazards presented by the proliferation of munitions on the battlefield and the demonstrated capabilities of Army

EOD forces to support the operational warfighter seem to suggest that the employment of EOD forces early in operations will only increase.

Army EOD Missions and Requirements

In Afghanistan

As the interim Afghan government gained control, U.S. and coalition forces continued to conduct operations to hunt down and destroy enemy forces. Army EOD forces were increasingly sought out as enemy supply caches were discovered to be booby-trapped. As mortar and rocket attacks occurred, EOD forces were called on to provide crater analysis to determine weapon type and direction of attack to narrow the search of responding U.S. and coalition forces. Post-blast investigations of mine strikes and IED incidents resulted in EOD personnel providing critical tactical intelligence on enemy threats to current operations, and the expertise brought to bear by EOD personnel was used to develop countermeasures (rapid prototyping and production of electronic countermeasure (ECM) devices) for use by coalition members. Another benefit of the intelligence gathered by EOD forces was enhanced force protection due to the rapid dissemination of hazard information throughout the chain of command and to the larger U.S. EOD community. EOD teams were functioning as special staff at the battalion task-force level for operations in Afghanistan. EOD expertise and advice quickly became critical to planning and conducting operations to capture enemy ammunition caches. The teams were functioning with task force elements from planning, through insertion, and on to the objective. SOF teams quickly realized the benefit of incorporating EOD forces into their teams to deal with unexploded ordnance hazards on the objective, to destroy

captured enemy munitions, to assist with weapons “buy back” programs, and to conduct sensitive site exploitations (searches of areas believed to be used for the production or storage of WMDs). EOD teams were routinely integrated with Special Forces A-teams, living with the team at their safe house to facilitate the rapid conduct of operations. While at a SOF forward-operating base (FOB) or safe house, EOD personnel were expected to assist with security duties by taking their turn manning fighting positions. Likewise, when conducting operations with conventional forces, EOD personnel had to be familiar with patrol operations and able to actively participate in combat operations should the need arise.

Similarities to EOD Missions in the Emerging Operating Environment

Ordnance Corps Vision: America’s Army of the 21st Century discusses of the necessity for early integration of EOD support at all three levels of planning (tactical, operational, and strategic) to ensure battlefield success across the full spectrum of conflict, and joint and combined interoperability and the requirement for ordnance units to “continually train to operate in coordination with elements of other services, agencies, and nations” (U.S. Army Ordnance Corps 2002). Support provided in Afghanistan included direct and general support to U.S., coalition, and Afghan forces, as well as support to other governmental agencies for operations. Peacetime EOD missions, such as providing EOD support to the Secret Service, State Department, and Defense Department for very important persons protection; advising and assisting civil authorities in the remediation of military ordnance; and responding to counter terrorism and WMD threats continued as the campaign in Afghanistan took place. Army EOD provided small, highly

trained, modular, semiautonomous units to support, and sometimes conduct, operations in a dispersed battle space to achieve intent-based strategic aims; much like the vision documents describe the emerging operating environment.

Individual and Unit Characteristics Required to Support Forces

In Afghanistan

According to SOF personnel interviewed, units supporting their operations in Afghanistan required advanced individual weapons training, combat life-saving medical skills, intra-team communications capabilities, and training on mounted (vehicular) and heliborne operations, as well as training specific to urban environments. The Special Operations community recommended both a side arm and long rifle (M-4 carbine) for EOD forces operating in Afghanistan to give the EOD team leader the flexibility and option to always be able to carry a weapon during operations.

EOD teams were required to configure their EOD loads (tools and equipment) based on the transportation available (if any) for specific operations. Patrolling from the insertion point to the objective was another requirement. EOD soldiers participated in dismounted operations (movement to contact, bounding overwatch, etc.) and the supported forces noticed. From a force protection standpoint, the teams had to be able to defend themselves in the event the column was attacked. EOD forces conducted heliborne operations frequently, with teams conducting air-mobile insertions into three or four objectives in as many days as the normal operating tempo. The ability to select, describe, and mark helicopter landing zones (HLZs) was critical for medical evacuation (MEDEVAC) planning for EOD operations. To support operations, units were required

to conduct sling load operations with all their organic equipment and vehicles. Load planning, plus the ability to certify hazardous cargo, for movement by intra-theater fixed-wing platforms, such as the C-130, was also essential down to the team level.

EOD companies had to provide direct support and general support to conventional and unconventional forces simultaneously. EOD forces provided input to the planning process at every level as special staff. Participation in the planning process at the tactical level, to include mission brief-backs, rehearsals of actions on the objective, and actions after the objective was secured, was absolutely crucial to successful operations.

The medical skill of individual soldiers was not a significant concern in Afghanistan, due to the ready availability of medical personnel to support operations. EOD forces provided in-depth briefings to medical personnel to preclude hazards to them should a detonation occur during an operation; however, the ability of EOD personnel to render first responder medical aid was important to both supported forces and the EOD soldier.

In the Emerging Operating Environment

Almost all of the subjects interviewed agreed that the skills required to conduct EOD operations in Afghanistan are directly applicable to any future conflict. The ability of EOD forces to get to the fight was crucial to the successful overall conduct of operations. EOD forces must be fit and immediately deployable to support contingency operations as directed. The nature of the environment and enemy actions in Afghanistan required EOD forces to be prepared to defend themselves at all times while conducting EOD operations. The Objective Force is characterized as one that is more responsive,

deployable, lethal, versatile, agile, survivable, and sustainable than today's force (Department of the Army 2001, 33-35). *The Army Vision*, published in October 1999, underpins the Army transformation process. It describes the spectrum of operations, which drives "a need for land forces in joint, combined, and multinational formations for a variety of missions" (Shinseki, 1999). It calls for forces that are dominant throughout full-spectrum operations ranging from humanitarian operations through major theater wars. The force described must be lethal and survivable. The vision states "Every element in the war-fighting formation will be capable of generating combat power and contributing decisively to the fight" (Shinseki 1999). Specific to the EOD function, the *Ordnance Corps Vision: America's Army of the 21st Century* predicts a joint service EOD force that is modular and tailorable to the threat. This force "will employ parachute qualified and underwater dive qualified personnel worldwide with the capability to respond to any UXO hazard" (U.S. Army Ordnance Corps 2002). The discussion of the necessity for early integration of EOD support at all three levels of planning (tactical, operational, and strategic) to ensure battlefield success across the full spectrum of conflict points to several missions for future EOD support. *Ordnance Corps Vision: America's Army of the 21st Century* highlights the renewed attention many existing EOD missions have gained post- 11 September. *Ordnance Corps Vision: America's Army of the 21st Century* focuses heavily on joint and combined interoperability and stresses the need for ordnance units to "continually train to operate in coordination with elements of other services, agencies, and nations" (U.S. Army Ordnance Corps 2002), calling for small, highly trained modular units operating throughout a dispersed battle space. Each vision document points to the need for highly trained small units operating in a dispersed

manner throughout a rapidly transitioning area of operations, capable of operating semi-autonomously (with reach-back communications), to achieve intent-based strategic aims. The soldiers that make up this force require a broad range of individual and unit tactical skills, and must be trained in a joint and combined environment to master the collective interoperability and transition skills necessary for success. Army EOD is tasked to eliminate or reduce hazards to U.S. and allied forces, installations, infrastructure, and civilians presented by unexploded ordnance, improvised explosive devices (to include CBRNE), and WMDs.

Units Now Tasked with Similar Missions/
Operating Environment

SOF Characteristics

One subject of the interview summed up SOF characteristics as highly flexible and maneuverable forces that operate in small teams, using high technological communications gear, specialized weapons, and specialized vehicles. The SOF soldier tends to be a little older and more mature than his conventional Army counterpart. SOF members have volunteered more than once (at least three times--for the Army, Airborne duty, and application to a SOF element) and tend to be married. Although volunteers, soldiers in SOF are assessed and selected for the training process that leads to the award of their career field specialty. Due to the rigorous, extensive, and costly training involved in “producing” a SOF soldier (the initial training takes up to two years), emphasis is placed on selecting personnel that demonstrate an ability to successfully complete the training and function as a SOF soldier. Units are considered by some regular forces to be rank heavy, mainly composed of senior noncommissioned officers and officers. Training

and assignments are varied, and missions tend to have the potential to result in high levels of attention should they be unsuccessful. Soldiers operate in small, widely dispersed teams and routinely have responsibilities far greater than those of their conventional peers.

Similarities between SOF and EOD Forces

EOD soldiers also operate in small, widely dispersed teams, and routinely have responsibilities far greater than those of their peers. The units are small and spread throughout the United States. All EOD soldiers are “twice over” volunteers who require Top Secret security clearances. The training required to become an EOD soldier takes eight months to complete and is conducted at a centralized location for all services and ranks. EOD soldiers are exposed to a level of joint interoperability very early in their development, are recognized as experts in their craft, typically have developed a wide range of expertise due to their varied backgrounds, and routinely must make decisions based solely on standard operating principles in the absence of specific guidance. They are masters of creative thinking and critical reasoning, two key areas of emphasis in the Objective Force. They display the mental toughness and ingenuity to overcome common difficulties, and if properly resourced, will overcome even greater obstacles. Recently, two specialized units were formed from within the field that developed advanced technological capabilities and the enhanced skills required to address WMDs. This specialized training and technology will filter out to the conventional companies where it will become standardized across the force.

Individual and Unit Tactical Training Required
to Maintain Operational Proficiency

EOD in Afghanistan

Dismounted operations (insertions, extractions, and patrolling) as part of a maneuver unit were the norm in Afghanistan. Foot marching was a primary means of transport. EOD Teams had to get used to working out of their rucksacks and tailoring their equipment load as the mission dictated. This required a much greater level of focus on intelligence preparation than was experienced in the past. Familiarity with load selection, security on the march, and the physical readiness to keep up with supported elements was necessary to effectively conduct EOD operations in Afghanistan. Operating under night conditions with night vision devices was a recurring requirement as well. Air movement and hazardous cargo certification training was essential. Even in a combat theater, the Air Force required that all loads have the proper hazardous cargo certifications during all movements, which required the signature of a qualified individual. The current command requirement for an EOD unit is for two personnel qualified to certify hazardous cargo. Each Team Leader should be qualified based on the operational requirements experienced in Afghanistan. The steadfast insistence on improvements in integration training, sensitive site exploitations (SSE), LVIED diagnostics and attack, tactical decision-making, deployment training focus, and CBRNE incident response paid dividends as U.S. forces conducted operations in Afghanistan. As related to deployments, the focus on up to date intelligence reporting and scenario development used to train and develop teams and companies in current and emergent

technologies as required by current deployments, combat operations, and CONUS (Homeland) defense was key to successful operations as well.

Similarities and Differences between SOF and EOD Force Requirements

The differences in tactical skills capabilities between the EOD personnel and the SOF teams they supported were simply stated by one subject as a matter of training on individual weapons (especially in an urban environment) and communications gear. The following table (table 3) was used to explain key differences between EOD forces and the SOF units they supported in Afghanistan:

Table 3. EOD and SOF Characteristics in Afghanistan

Tactical Area / Unit	EOD Forces	SOF
Individual Weapons	M16A2 Rifles	M4 Carbines and M9 Pistols
Medical Capability	Combat Lifesaver Trained Personnel	Special Forces Medics
Communications Equipment	SINGARS Radios	Multi-band hand-held system for intra-team Use Multi-band long -range system
Mobility Skills	Limited Dismounted Capability (Tools Limited) Wheeled Transport Limited Helicopter Operations	Dismounted Wheeled Helicopter Airborne Delivery

While differences in equipment are easy to identify, more than different or more modern equipment drives the differences in capabilities. Significant differences apparent in individual weapons skills and the mobility capabilities between EOD forces and SOF

elements involve different interpretations of the capabilities required to execute the respective forces anticipated missions.

Capabilities and Limitations of Army EOD Forces

In Afghanistan

The mobility skills of the EOD forces delayed operations more than once. Subjects interviewed specifically mentioned the ability to plan for and select suitable insertion points, or to conduct pathfinder operations, to be able to get to location to conduct EOD operations as a limitation at times, as well as the hazardous cargo certifications mentioned previously. METT-TC will dictate limitations in the EOD equipment load, and soldiers need to train to operate with less than a full EOD tool load.

Individual weapons skills, to include foreign weapons familiarization, were an issue more than once. Some EOD teams were living and operating out of the SF safe houses, so they were expected to assist with security duties and man fighting positions. Many of these positions were equipped with foreign weapons due to the coalition nature of the actions, and EOD personnel lacked familiarity with small arms common to the region. The patrolling skills necessary to function as a contributing element of an operation were questionable at times. For instance, EOD units traveling in a convoy knew how to react to certain scenarios, such as ambushes, snipers, and indirect fires; however, when traveling dismounted they did not appear as well trained on individual movement techniques (IMT) and small-unit operations. EOD soldiers were able to rapidly absorb the training provided; however, the shortfall in capability upon arrival was noted by the supported elements.

EOD personnel deployed to Afghanistan had basic combat lifesaver skills and medical support was plentiful in theater. Despite this, many of the personnel interviewed related that developing advanced medical skills within units would be viewed as a valuable capabilities enhancement for future support operations. Though many units in the field have conducted training to qualify soldiers as emergency medical technicians (EMTs), it has not been a command priority.

Communications equipment provided to EOD personnel in Afghanistan was insufficient to meet the operational requirements for inter-team communications, or for adequate command and control of forces. Both SOF and conventional forces had more advanced communications equipment and did not stock repair parts for the system issued to EOD units. On several occasions, the EOD units borrowed communications equipment from supported elements in order to maintain communications during operations. While the EOD Technical Division is focusing on developing communications capabilities for reach-back advice versus render-safe procedure (RSP) development, deployed EOD forces need a capability in-theater. NVGs were a major problem for operating in Afghanistan. Units had to sign for NVGs (more current technology) from other units due to the lack of availability in the unit, but were still unable to equip all soldiers as required for some operations.

Relevant to EOE

Broad discussion of the enabling technology for several of the Objective Force characteristics is addressed in the White Paper; however, it ties the success of the enabling technology to trained and ready soldiers. One key area addressed as a

technological enabler is space-based communications, which “provide the capability for a smaller deployed footprint with “reach back” and “push forward” tailored communications” (Department of the Army 2002). EOD communications capabilities are limited by unit authorizations that do not provide communications specialists to conventional EOD units. A lack of resources and chronically low priority within the Army’s equipment issue system makes fielding adequate communications systems problematic.

EOD soldiers, while not trained for the full objective force mobility capabilities envisioned, are capable of multi-platform deployment. With enlisted strength currently at 597 soldiers (roughly 80 percent of the total authorization), there are 85 soldiers who are airborne qualified, or 14 percent of the population today. The primary barrier to greater capability, in the opinion of some interviewed, is low expectations and standards. These same subjects feel that this attitude is changing with recent leadership establishing higher expectations of EOD forces and the operational experience and appreciation for EOD capabilities gained during recent deployments. It seems clear, from both Army and Ordnance Corps vision documents, that the mobility skills required of EOD forces in the future will include both airborne and helicopter insertion capabilities.

SOF personnel interviewed were clearly impressed with the caliber of soldier present in the EOD field. They believed the EOD forces integrated well with their teams, and provided valuable expertise that was essential to their operations. SOF elements were able to issue EOD forces supporting them small quantities of weapons and other equipment, and provided some limited training in advanced marksmanship techniques to enable them to function as the mission dictated. All SOF personnel interviewed expressed

the need for EOD forces to conduct advanced marksmanship training. Several of those interviewed suggested changing the individual weapons carried by EOD personnel to their standard of a carbine and pistol for each soldier due to their observations of EOD mission requirements.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this undertaking was to explore whether Army Explosive Ordnance Disposal (EOD) individual and unit tactical training is sufficient to support forces in the emerging operating environment in the context of the ongoing transformation of the Army. To answer this question, we had to first explore the following subordinate questions: What characteristics of the emerging operating environment are relevant to EOD? What are the requirements (missions) for Army EOD in the emerging operating environment? What individual and unit tactical characteristics or capabilities must the Army EOD force possess to achieve the goals set out by the Chief of Staff with respect to the emerging operating environment? What units now in existence are tasked with missions, or have operating requirements, similar to those Army EOD forces will face in supporting the objective force? What individual and unit tactical training is required of these units to maintain operational proficiency? What are the current capabilities and limitations of Army EOD forces individual and unit tactical skills with respect to supporting the objective force in the emerging operating environment?

Chapter 4 dealt with the secondary questions posed in this study by comparing conditions and operations in Afghanistan to those descriptions of the Emerging Operating Environment envisioned by the senior leadership of the Army, then considering the capabilities required of forces operating in Afghanistan to those of Army EOD elements. The interview subjects clearly felt that the enemy, conditions, and operations in Afghanistan closely mirrored those of the emerging operating environment; furthermore,

they believed the employment of EOD forces was indicative of missions for EOD in the future. The high levels of technical expertise, adaptability and maturity of Army EOD soldiers were specifically noted as “characteristics to sustain” by several interview subjects. This study of operations in Afghanistan demonstrates that Army EOD forces exhibit some shortfalls in individual and unit tactical training required to support the Objective Force. Specific areas to improve include individual weapons skills, small unit patrolling, communications and night vision capabilities, and unit mobility skills (both rotary and fixed wing operations).

The compressed academic cycle serves to limit the researcher to a narrow field of inquiry to complete the project in a timely fashion. Several areas of interest for further study seemed to suggest themselves as this project progressed. Army EOD forces tend to receive new equipment much later than the forces they support. A closer look at the fielding process for Army common equipment to EOD forces may suggest possible solutions to some of the equipment concerns (specifically night vision, communications, and weapons) expressed by interview subjects. Army EOD forces seldom suffer from “idle hands” with a peacetime operations tempo nearly that experienced during operations in Afghanistan. A detailed exploration of the proper mix for training individual weapons skills and small unit patrolling operations at the institutional and unit levels would greatly benefit the field. A study of resourcing EOD forces for training or operations would also be a worthwhile undertaking.

To function successfully on the battlefields envisioned in the future, EOD forces must possess the capabilities to arrive at the point of support through multiple means, contribute to the supported organizations conduct of defensive actions, provide limited

medical aid until other specialists can arrive, and maintain continuous communications with the chain of command. All of these skills were necessary to successfully conduct operations in Afghanistan, and participants in those operations agree that these skills are vital to any future conflict. Currently, it is left to individual units to develop these skills. To prepare for the future, EOD must develop a systemic solution to developing individual and unit tactical skills.

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